AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions of claims in the application.

Listing of Claims:

1-5 (Cancelled)

6. (Previously Presented) A method for detecting an increased risk of developing Down's Syndrome in a mammalian embryo or fetus, said method comprising detecting the presence of a polymorphic methionine synthase reductase (MTRR) in said embryo or fetus, or in a future female parent of said embryo or said fetus, wherein detection of a homozygous MTRR polymorphism in said future female parent, said embryo, or said fetus indicates an increased risk of developing Down's Syndrome in said embryo or said fetus, wherein said polymorphism comprises a G instead of an A at position 66 relative to the first nucleotide of the start codon of MTRR.

7. (Previously Presented) The method of claim 6, wherein said polymorphic MTRR is detected by analyzing nucleic acid from said future female parent, said embryo, or said fetus.

8. (Original) The method of claim 7, wherein said nucleic acid is genomic DNA.

9. (Original) The method of claim 7, wherein said nucleic acid is cDNA.

10. (Cancelled)

11. (Previously Presented) The method of claim 7, wherein said polymorphic MTRR is detected by a method comprising:

a) PCR-amplifying a segment of MTRR nucleic acid from said future female parent, said embryo, or said fetus using primers MSG108S (SEQ ID NO: 49) and AD292 (SEQ ID NO: 50), and

b) digesting the product of the PCR amplification reaction with the restriction enzyme *Nde* I, wherein a PCR product that is digested by *Nde* I indicates the presence of said polymorphic MTRR.

12. (Cancelled)

13. (Previously Presented) The method of claim 6, wherein said method comprises detecting the presence of said polymorphic MTRR in said future female parent.

14. (Previously Presented) The method of claim 6, wherein said method comprises detecting the presence of said polymorphic MTRR in said embryo or fetus.

15-34 (Cancelled)

35. (Previously Presented) A method for detecting an increased risk of premature

coronary artery disease ~~cardiovascular disease~~ in a mammal, said method comprising detecting the presence of a homozygous methionine synthase reductase (MTRR) polymorphism in said mammal, wherein said MTRR polymorphism comprises a G instead of an A at position 66 relative to the first nucleotide of the start codon of MTRR.

36. (Previously Presented) The method of claim 6, wherein said future female parent is human.

37. (Previously Presented) The method of claim 35, wherein said mammal is human.

38-41 (Cancelled)

42. (Previously Presented) The method of claim 35, wherein said MTRR polymorphism is detected by analyzing nucleic acid from said mammal.

43-49 (Cancelled)

50. (Previously Presented) A method for detecting an increased risk of developing a neural tube defect in a mammalian embryo or fetus, said method comprising detecting the presence of a homozygous methionine synthase reductase (MTRR) polymorphism and low serum cobalamin level in a future female parent of said embryo or fetus, wherein said MTRR polymorphism comprises a G instead of an A at position 66 relative to the first nucleotide of the

start codon of MTRR.

51. (Previously Presented) The method of claim 50, wherein said future female parent is human.

52. (Previously Presented) The method of claim 50, wherein said MTRR polymorphism is detected by analyzing nucleic acid from said future female parent.

53. (Previously Presented) The method of claim 50, wherein said neural tube defect is spina bifida.

54. (Previously Presented) The method of claim 50, wherein detecting said low serum cobalamin level comprises detecting a concentration of serum cobalamin that is less than 328 pmol/L in said fetus or embryo, or a concentration of serum cobalamin that is less than 259 pmol/L in said future female parent of said embryo or fetus.

55. (Previously Presented) A method for detecting an increased risk of developing a neural tube defect in a mammalian embryo or fetus, said method comprising detecting the presence of a homozygous methionine synthase reductase (MTRR) polymorphism and a homozygous methylenetetrahydrofolate reductase (MTHFR) polymorphism in said embryo or fetus, or in a future female parent of said embryo or fetus, wherein said MTRR polymorphism comprises a G instead of an A at position 66 relative to the first nucleotide of the start codon of

MTRR and said MTHFR polymorphism comprises a T instead of a C at position 677 relative to the first nucleotide of the start codon of MTHFR, wherein detection of said MTRR and MTHFR polymorphisms indicate an increased risk of developing said neural tube defect in said embryo or fetus.

56. (Previously Presented) The method of claim 55, wherein said embryo or fetus is human.

57. (Previously Presented) The method of claim 55, wherein said future female parent is human.

58. (Previously Presented) The method of claim 55, wherein said MTRR and MTHFR polymorphisms are detected by analyzing nucleic acid from said embryo or fetus.

59. (Previously Presented) The method of claim 55, wherein said neural tube defect is spina bifida.